

WE CLAIM:

1. A compound having a formula comprising

5 X_1 -Ser-Met-Arg-Glu-Arg- X_2

wherein X_1 and X_2 , which may be the same or different, each represents from zero to 30 amino acid residues, the amino acid residues of X_1 and X_2 being such that, when X_1 and X_2 are not both zero, the formula represents a reverse-order sequence corresponding to amino acid residues 332 to 328 of human APP and from zero to 30 successive amino acid residues of human APP extending in each direction therefrom, the formula also comprising sequences closely homologous to said reverse-order sequence and sequences in which said amino acids thereof are replaced by nonstandard amino acids and/or by derivatives of said amino acids, provided always that the compound is not

20 Met-Val-Gln-Ser-Met-Arg-Glu-Arg-His-Lys-Ala-Glu-Leu-Arg-Glu-Lys-Ala (SEQ ID No: 7)

2. A compound according to claim 1, in which X_1 is from zero to 20 and/or X_2 is from zero to 20.
- 25 3. A compound according to claim 2, in which X_1 is from zero to 10 and/or X_2 is from zero to 10.
4. A compound according to claim 3, in which X_1 and/or X_2 is zero.
5. A compound according to claim 4, in which X_1 and 30 X_2 are both zero.
6. A pharmaceutical composition comprising a compound according to claim 1, and a pharmaceutically acceptable carrier, filler or excipient.
7. A pharmaceutical composition comprising the 35 polypeptide

Ser-Met-Arg-Glu-Arg

(SEQ ID No: 4)

and pharmaceutically acceptable carrier, filler or excipient.

8. A pharmaceutical composition comprising a compound according to claim 1 which is chemically or physically linked or conjugated to a further molecule or vehicle whereby the compound can be delivered across the blood-brain barrier.

9. A pharmaceutical composition comprising the polypeptide

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Ser-Met-Arg-Glu-Arg

(SEQ ID No: 4)

which is chemically or physically linked or conjugated to a further molecule or vehicle whereby the polypeptide can be delivered across the blood-brain barrier.

10. A pharmaceutical composition comprising the polypeptide

20

Arg-Glu-Arg

(SEQ ID No: 9)

and a pharmaceutically acceptable carrier, filler or excipient.

11. A pharmaceutical composition comprising the polypeptide

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Arg-Glu-Arg

(SEQ ID No: 9)

which is chemically or physically linked or conjugated to a further molecule or vehicle whereby the polypeptide can be delivered across the blood-brain barrier.

12. A method of treatment of a neurodegenerative disease in an animal, comprising:

identifying an animal suffering or potentially suffering from a neurodegenerative disease; and

administering to the animal an amount of a compound according to claim 1 effective to treat the neurodegenerative disease.

13. A method of treatment of a neurodegenerative disease in an animal, comprising:

identifying an animal suffering or potentially suffering from a neurodegenerative disease; and

5 administering to the animal an amount of a compound according to claim 5 effective to treat the neurodegenerative disease.

14. A method of treatment of a neurodegenerative disease in an animal, comprising:

10 identifying an animal suffering or potentially suffering from a neurodegenerative disease; and

administering to the animal an amount of a pharmaceutical composition according to claim 7 effective to treat the neurodegenerative disease.

15 15. A method of treatment of a neurodegenerative disease in an animal, comprising:

identifying an animal suffering or potentially suffering from a neurodegenerative disease; and

administering to the animal an amount of a
20 pharmaceutical composition according to claim 8 effective to treat the neurodegenerative disease.

16. A method of treatment of a neurodegenerative disease in an animal, comprising:

identifying an animal suffering or potentially
25 suffering from a neurodegenerative disease; and

administering to the animal an amount of a pharmaceutical composition according to claim 9 effective to treat the neurodegenerative disease.

17. A method of treatment of a neurodegenerative
30 disease in an animal, comprising:

identifying an animal suffering or potentially suffering from a neurodegenerative disease; and

administering to the animal an amount of the compound

35 Arg-Glu-Arg

(SEQ ID No: 9)

effective to treat the neurodegenerative disease.

18. A method of treatment of a neurodegenerative disease in an animal, comprising:

identifying an animal suffering or potentially suffering from a neurodegenerative disease; and

5 administering to the animal an amount of a pharmaceutical composition according to claim 10 effective to treat the neurodegenerative disease.

19. A method of treatment of a neurodegenerative disease in an animal, comprising:

10 identifying an animal suffering or potentially suffering from a neurodegenerative disease; and

administering to the animal an amount of a pharmaceutical composition according to claim 11 effective to treat the neurodegenerative disease.

15 20. A method according to claim 12, in which the animal is a human and the neurodegenerative disease is Alzheimer's disease.

21. A method according to claim 13, in which the animal is a human and the neurodegenerative disease is
20 Alzheimer's disease.

22. A method according to claim 14, in which the animal is a human and the neurodegenerative disease is Alzheimer's disease.

23. A method according to claim 15, in which the
25 animal is a human and the neurodegenerative disease is Alzheimer's disease.

24. A method according to claim 16, in which the animal is a human and the neurodegenerative disease is Alzheimer's disease.

30 25. A method according to claim 17, in which the animal is a human and the neurodegenerative disease is Alzheimer's disease.

26. A method according to claim 18, in which the animal is a human and the neurodegenerative disease is
35 Alzheimer's disease.

27. A method according to claim 19, in which the animal is a human and the neurodegenerative disease is

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Alzheimer's disease.

28. A method of producing a cognitive enhancement effect in an animal, comprising

5 providing an animal in which said effect is to be produced and administering to the animal an amount of a compound according to claim 1 effective to produce the cognitive enhancement.

29. A method of producing a cognitive enhancement effect in an animal, comprising

10 providing an animal in which said effect is to be produced and administering to the animal an amount of a compound according to claim 5 effective to produce the cognitive enhancement

30. A method of producing a cognitive enhancement effect in an animal, comprising

providing an animal in which said effect is to be produced and administering to the animal an amount of a pharmaceutical composition according to claim 7 effective to produce the cognitive enhancement.

20 31. A method of producing a cognitive enhancement effect in an animal, comprising

providing an animal in which said effect is to be produced and administering to the animal an amount of a pharmaceutical composition according to claim 8 effective to produce the cognitive enhancement.

32. A method of producing a cognitive enhancement effect in an animal, comprising

30 providing an animal in which said effect is to be produced and administering to the animal an amount of a pharmaceutical composition according to claim 9 effective to produce the cognitive enhancement.

33. A method of producing a cognitive enhancement effect in an animal, comprising

35 providing an animal in which the effect is to be produced; and

administering to the animal an amount of the compound

(SEQ ID No: 9)

34. A method of producing a cognitive enhancement
5 effect in an animal, comprising
providing an animal in which said effect is to be
produced and administering to the animal an amount of a
pharmaceutical composition according to claim 10 effective
to produce the cognitive enhancement.

10 35. A method of producing a cognitive enhancement
effect in an animal, comprising
providing an animal in which said effect is to be
produced and administering to the animal an amount of a
pharmaceutical composition according to claim 11 effective
15 to produce the cognitive enhancement.